

**U. S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION**

1. PROJECT TITLE/PARTICIPANT Environmental Management/Paducah Remediation Services, LLC (PRS)		2. DATE 6/29/07	3. IDENTIFICATION SITE Paducah Project DOE Portsmouth/Paducah Project Office (PPPO)
4. WBS ELEMENT CODE 04.11.10.07		5. WBS ELEMENT TITLE Outyear Soils Remedial Action	
6. INDEX LINE NO. N/A	7. REVISION NO. AND AUTHORIZATION Rev. 0		8. DATE 6/29/07
9. APPROVED CHANGES N/A			
10. SYSTEM DESIGN DESCRIPTION N/A		11. BUDGET AND REPORTING NUMBER N/A	
12. ELEMENT TASK DESCRIPTION <p>THIS IS A PLANNING LEVEL WBS DICTIONARY</p> <p><u>WBS STRUCTURE</u></p> <p>The scope of this element includes the following subelements:</p> <ul style="list-style-type: none"> • WBS 04.11.10.07.01 Soils Remedial Action Subproject Management • WBS 04.11.10.07.02 Remedial Investigation Report • WBS 04.11.10.07.03 Feasibility Study • WBS 04.11.10.07.04 Proposed Plan • WBS 04.11.10.07.05 Record of Decision • WBS 04.11.10.07.06 Remedial Design Work Plan • WBS 04.11.10.07.07 Remedial Design Report • WBS 04.11.10.07.08 Remedial Action Work Plan • WBS 04.11.10.07.09 Remedial Action • WBS 04.11.10.07.10 Remedial Action Completion Report <p><u>INTRODUCTION</u></p> <p>The objective of this subproject is to assess the Soils Operable Unit (SOU) at Paducah Gaseous Diffusion Plant (PGDP) and then to conduct cleanup of the contaminated areas. In general, the soil boundary is considered as the ground surface to 10 feet below ground surface and 16 feet below ground surface in the vicinity of several water lines that have invert elevations that deep. Assessments will be addressed through remedial action documentation such as Remedial Investigation/Feasibility Study (RI/FS) Reports, Baseline Risk Assessment (BRA), Proposed Remedial Action Plan (PRAP), and Record of Decision (ROD). All existing applicable data, including previous site evaluations, will supplement the data obtained during the RI to determine risk and assist in the selection of the remedial actions to be included within the cleanup of soils.</p> <p>Fifty-five solid waste management units (SWMUs) and areas of concern (AOCs) are included in this project as well as sitewide evaluation of polychlorinated biphenyls (PCBs) soils and radiological contaminated soils inside the plant security fence. RI Report, FS Report, PRAP, and a ROD will be developed. In addition, cleanup is expected to be primarily excavation and disposition of contaminated soils identified during assessments.</p> <p><u>LOGIC RELATIONSHIPS</u></p> <p>Interfaces: <u>Internal to Contractor</u></p>			

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<ul style="list-style-type: none">• All contractor project managers and staff• All subcontractors <p><u>External to Contractor</u></p> <ul style="list-style-type: none">• U.S. Department of Energy (DOE) Portsmouth/Paducah Project Office and support contractors• DOE Headquarters or other DOE sites (if applicable)• U.S. Environmental Protection Agency (EPA)• Commonwealth of Kentucky (KY)• Site tenants including United States Enrichment Corporation (USEC); Uranium Disposition Services, LLC; and Swift & Staley Team (SST)• USEC services in the area of property, information technology, radios, etc.• SST, particularly in the areas of property management, information technology, and security.• Nevada Test Site (NTS): Profiling and disposition of newly generated and classified and fissile low-level waste (LLW), if required or applicable.• EnergySolutions: Profiling, treatment, and disposition of mixed and LLW, if required or applicable.• Toxic Substances Control Act (TSCA) Incinerator, if required or applicable.• Commercial treatment, storage, or disposal (TSD) Facility: For treatment and disposal of non radioactive hazardous waste, if required or applicable.• Stakeholders• Citizens Advisory Board and supporting contractor Edward Holmes, Inc (EHI).• DOE Integrated Safety Management System (ISMS) Verification Team• Other non-regulatory key interfaces <p>Time Sequencing with Other Work:</p> <ul style="list-style-type: none">• DOE Material Storage Areas (DMSAs) will be removed before the implementation of the Remedial Action. The Removal Action will precede the Remedial Action. <p><u>SCOPE DESCRIPTION</u></p> <p>WBS 04.11.10.07.01 Soils Remedial Action Subproject Management Provide overall management activities associated with this subproject. Activities performed under this subelement include the following:</p> <ul style="list-style-type: none">• Perform technical, contractual, and project functions necessary to effectively manage and report scope, schedule, and budget.• Manage and transmit required documents to the Administrative Record.• Maintain all activities within the defined safety, environmental, and quality requirements.• Perform technical and personnel management functions.• Maintain technically qualified and properly trained personnel.• Develop, evaluate, and report project performance metrics.• Interface with DOE, KY, EPA, other prime contractors, and stakeholders, as needed. <p>The method(s) used for determining earned value for this WBS element is Level of Effort.</p> <p>WBS 04.11.10.07.02 Remedial Investigation Report</p> <ul style="list-style-type: none">• Complete the D0, D1, and D2 RI Report <p>The method(s) used for determining earned value for this WBS element is Percent Complete.</p>		

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WBS 04.11.10.07.03 Feasibility Study

- Complete the D0, D1, and D2 FS/BRA

The method(s) used for determining earned value for this WBS element is Percent Complete.

WBS 04.11.10.07.04 Proposed Plan

- The D0, D1, and D2 PRAP will be written and submitted to the public for acceptance.

The method(s) used for determining earned value for this WBS element is Percent Complete.

WBS 04.11.10.07.05 Record of Decision

- The D0, D1 and D2 ROD will be developed, pending acceptance of the PRAP.
- The ROD will be completed and signed by the DOE and EPA, with concurrence from KY.
- Develop the D0, D1, and D2 Land Use Control Implementation Plan (LUCIP).
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The method(s) used for determining earned value for this WBS element is Percent Complete.

WBS 04.11.10.07.06 Remedial Design Work Plan

- Develop the Remedial Action Work Plan (RAWP).

The method(s) used for determining earned value for this WBS element is Percent Complete.

WBS 04.11.10.07.07 Remedial Design Report

- Develop the 30%, 60%, 90% and CFC Remedial Action Design

The method(s) used for determining earned value for this WBS element is Percent Complete.

WBS 04.11.10.07.08 Remedial Action Work Plan

- Develop the D0, D1, and D2 Remedial Action Work Plan

The method(s) used for determining earned value for this WBS element is Percent Complete.

WBS 04.11.10.07.09 Remedial Action

- Based on information contained in the draft Remedial Design, begin to develop a request for proposal for a Remedial Action subcontractor.
- Select a subcontractor to perform remedial action. Subcontractor will develop a RAWP, Construction Quality Assurance (QA) Work Plan, and have these documents approved, mobilize to the field, and begin fieldwork.
- Complete remedial action fieldwork. Demobilize from the field and prepare a draft and final Remedial Action reports for review and approval by the regulators.
- 90% of the waste generated will meet the waste acceptance criteria (WAC) for C-746-U Landfill. The remaining will be disposed via rail off-site.

The method(s) used for determining earned value for this WBS element is Percent Complete.

Before beginning fieldwork, the project team must have an internal field review (IFR). For this IFR,

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<p>the project team will put together a work package. This work package includes the following:</p> <ul style="list-style-type: none"> • Work instructions – includes hold points • Training matrix and evidence of training • UCD/USQD • Lessons Learned • Work authorization and work release from facility managers • Procedures • AHA • Excavation/Penetration Permits • RWP • Team Meeting documentation • Project Organizational Chart <p>In addition to the above, a Sampling Analysis Plan (SAP), Quality Assurance Plan (QAP), Waste Management Plan (WMP), and Health and Safety Plan (H&S) may be needed for any non-CERCLA actions.</p> <p>For CERCLA actions, the appropriate FFA/CERCLA documentation will be required which will include SAP, QAP, WMP, H&S Plan, and other documents, as applicable to the action. These documents may require regulatory approval.</p> <p>The work package and other documentation are developed by personnel that charge to this project and also by personnel that charge to project support service center (i.e., QAP and RWP).</p> <p>WBS 04.11.10.07.10 Remedial Action Completion Report</p> <ul style="list-style-type: none"> • Develop the Remedial Action Completion Report. <p>The method(s) used for determining earned value for this WBS element is Percent Complete.</p> <p><u>DELIVERABLES</u></p> <p>WBS 04.11.10.07.01 Soils Remedial Action Subproject Management</p> <p><u>Element Milestones:</u></p> <ul style="list-style-type: none"> • None <p><u>Element Deliverables:</u></p> <ul style="list-style-type: none"> • Paducah Contractor QA Project Plan • Paducah Contractor environmental, safety, and health (ES&H) Plan • Provide input to the following reports and submittals (if applicable): <ul style="list-style-type: none"> ○ Monthly Project Performance Report ○ Risk Management Plan Updates ○ Site Management Plan (SMP) ○ Semiannual Critical Analysis Report ○ Presentations ○ Federal Facility Agreement (FFA) briefings ○ Labor Standards Determinations ○ Gold Chart Performance Metrics ○ Annual updates to Site Treatment Plan ○ Annual Compliance Agreement Report ○ Annual ISMS Update 		

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<ul style="list-style-type: none">o Annual Work Smart Standards Updateo Financial Reporting, Management Analysis Reporting Systemo Annual Statement of Costs Incurred and Claimedo FFA Semiannual Progress Reporto Remedial Action/Regulatory Commitment Tracking Reporto Other reports/documents, as necessary		
WBS 04.11.10.07.02 Remedial Investigation Report <u>Element Milestones:</u> <ul style="list-style-type: none">• Approval of the RI Report <u>Element Deliverables:</u> <ul style="list-style-type: none">• RI Report D0, D1, and D2 versions		
WBS 04.11.10.07.03 Feasibility Study <u>Element Milestones:</u> <ul style="list-style-type: none">• Approval of the FS/BRA <u>Element Deliverables:</u> <ul style="list-style-type: none">• FS/BRA D0, D1, and D2 versions		
WBS 04.11.10.07.04 Proposed Plan <u>Element Milestones:</u> <ul style="list-style-type: none">• Approval of the PRAP <u>Element Deliverables:</u> <ul style="list-style-type: none">• Proposed Plan D0, D1 and D2 versions		
WBS 04.11.10.07.05 Record of Decision <u>Element Milestones:</u> <ul style="list-style-type: none">• Approval of the ROD <u>Element Deliverables:</u> <ul style="list-style-type: none">• ROD D0, D1, and D2 versions		
WBS 04.11.10.07.06 Remedial Design Work Plan <u>Element Milestones:</u> <ul style="list-style-type: none">• Approval of the Remedial Design Work Plan <u>Element Deliverables:</u> <ul style="list-style-type: none">• Remedial Design Work Plan D0, D1, and D2 versions		
WBS 04.11.10.07.07 Remedial Design Report <u>Element Milestones:</u> <ul style="list-style-type: none">• Approval of the Remedial Design Report <u>Element Deliverables:</u> <ul style="list-style-type: none">• Remedial Design Report D0, D1, and D2 versions		
WBS 04.11.10.07.08 Remedial Action Work Plan		

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<u>Element Milestones:</u> <ul style="list-style-type: none">• Approval of the Remedial Action Work Plan <u>Element Deliverables:</u> <ul style="list-style-type: none">• Remedial Action Work Plan D0, D1, and D2 versions WBS 04.11.10.07.09 Remedial Action <u>Element Milestones:</u> <ul style="list-style-type: none">• Soils Remedial Action fieldwork start <u>Element Deliverables:</u> <ul style="list-style-type: none">• Completion of waste disposal WBS 04.11.10.07.10 Remedial Action Completion Report <u>Element Milestones:</u> <ul style="list-style-type: none">• Approval of Remedial Action Completion Report <u>Element Deliverables:</u> <ul style="list-style-type: none">• Remedial Action Completion Report D0, D1, and D2 versions <u>REQUIREMENTS</u> <ul style="list-style-type: none">• Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)/National Contingency Plan• KY Hazardous Waste Permit (KY8-890-008-982)• FFA for the PGDP• SMP for the PGDP (annual revisions)• Applicable state and federal laws and regulations (applicable or relevant and appropriate requirements)• Contractor ISMS• UEO-1066, as updated, Lease Agreement between DOE and USEC, Revision 4, dated October 30, 2001• Enclosure to GDP 95-0018, as updated, USEC and DOE Resolution of Shared Site Issues, Revision 1, dated March 30, 1998• Applicable contractor plans, policies, and procedures.• WAC for all applicable treatment and disposal facilities that were in effect on April 24, 2006• Applicable DOE Orders• Applicable Federal Acquisition Regulations <p>It is the core value of the Contractor that the safety and health of every worker, the public at large, and our environment are the most important assets that we are entrusted to protect. To accomplish this, an ISMS, based on DOE's ISMS, has been implemented that incorporates the five core functions and is based on the seven guiding principles. The objective of ISMS is to systematically integrate safety and environmental protection into the planning and execution of all work activities. The term safety encompasses Nuclear Safety, Industrial Safety, Industrial Hygiene, Occupational Health, Health Physics, and environmental issues. ISMS requirements flow down to Contractor subcontractors. The five core functions are (1) define the scope of work, (2) analyze hazards, (3) develop and implement hazard controls, (4) perform work within controls, and (5) provide feedback and continuous improvement. The seven guiding principles are (1) line management responsibility for safety, (2) clear</p>		

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<p>roles and responsibilities, (3) competence commensurate with responsibility, (4) balanced priorities, (5) identification of safety standards and requirements, (6) hazard control tailored to work being performed, and (7) operations authorization.</p> <p>Before a subproject begins, several activities must be completed that demonstrate that all involved in the project have completed rigorous health and safety reviews and that all potential hazards of doing the work have been identified. The routine activities in remedial actions are conducted in accordance with standard operating procedures, activity hazard analyses, and Integrated Safety Management plans. Nonroutine work will require a readiness assessment, as necessary, to ensure complete health, safety, and environmental reviews prior to work start. This assessment is conducted by people experienced in similar kinds of work with the right to examine all aspects of a project about to commence and requires that the project team provide documented evidence that any applicable requirements of the job have been met.</p>		
<p><u>SCOPE ASSUMPTIONS</u></p> <ul style="list-style-type: none">• EPA and KY will adhere to review times set forth in the FFA.• No operation and maintenance (O&M) Plan will be required.• Long Term S&M subproject will cover five-year ROD reviews and any other maintenance issues that arise after completion of the remedial action.• Field activities will be consistent with the RAWP.• For the Remedial Action activities, 90% of waste generated will be disposed of in the Paducah solid waste landfill within one year of generation. Ten percent of waste will be disposed of off-site (EnergySolutions or NTS).• Soil Volumes to be used in excavation models will be obtained as listed below for Remedial Action.<ul style="list-style-type: none">◦ Assume excavation of 1-foot depth.◦ Total volume excavated equals 74,367 yd³ (without swell).• Verification sampling and analysis will be required as part of the remedial action efforts. Verification sampling would be conducted at a frequency of 10 samples per acre. There are a total of 92.2 acres, resulting in the collection of 922 verification samples.• Assume PCB cleanup level of 25 ppm and RAD cleanup to achieve of 15 mrem/year in industrial land use areas.• Assume all soil contamination is in industrial land use areas.• Contaminants of concern include PCBs, metals, and radiological parameters. Additional contaminants will not be identified.• Surface soil is defined as the soil from ground surface to 10 feet below ground surface and 16 feet below ground surface in the vicinity of the plant storm water system that have invert elevations that deep.• The primary driver is the RCRA/CERCLA process outlined by the FFA and SMP for PGDP.• All D2 documents will be approved as submitted.• Remedial action (RA) activities will not require other than normal security requirements for working on environmental projects at the PGDP. Personnel with a security clearance no higher than “L” will complete all of the RA activities. For personnel without clearances (i.e., subcontractors) only normal escort requires will apply.• All remedial action work will be conducted under Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements.• Comments received on the RI Report(s) will not require additional field investigation/sampling to be performed.• Comments received on the FS will not require additional field investigation/sampling to be		

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<p>performed.</p> <ul style="list-style-type: none">• Soils immediately adjacent to and beneath facilities will be addressed as part of the decontamination and decommissioning activities.		
<u>COMPLETION CRITERIA</u>		
WBS 04.11.10.07.01 Soils Remedial Action Subproject Management <ul style="list-style-type: none">• Completion of all technical and reporting requirements for the conduct and reporting of the Remedial Action.		
WBS 04.11.10.07.02 Remedial Investigation Report <ul style="list-style-type: none">• EPA/KY approval of RI Report		
WBS 04.11.10.07.03 Feasibility Study <ul style="list-style-type: none">• EPA/KY approval of FS		
WBS 04.11.10.07.04 Proposed Plan <ul style="list-style-type: none">• EPA/KY approval of PRAP		
WBS 04.11.10.07.05 Record of Decision <ul style="list-style-type: none">• EPA/KY approval of ROD		
WBS 04.11.10.07.07 Remedial Design Work Plan <ul style="list-style-type: none">• EPA/KY approval of Remedial Design Work Plan		
WBS 04.11.10.07.07 Remedial Design Report <ul style="list-style-type: none">• EPA/KY approval of Remedial Design Report		
WBS 04.11.10.07.08 Remedial Action Work Plan <ul style="list-style-type: none">• EPA/KY approval of Remedial Design Report		
WBS 04.11.10.07.09 Remedial Action <ul style="list-style-type: none">• Completion of the Remedial Action requirements as defined by the RAWP• Waste will be disposed of within one year of generation		
WBS 04.11.10.07.10 Remedial Action Completion Report <ul style="list-style-type: none">• EPA/KY approval of Remedial Action Completion Report		
<u>RISK MANAGEMENT</u>		
<p>See Risk Management Plan for analysis.</p>		
<p>Risk was mitigated through the following efforts:</p> <ul style="list-style-type: none">• Continue to perform due diligence in all work activities to reduce the possibility of safety incidents.• Perform due diligence to ensure that waste is properly packaged and that transportation conveyances are properly loaded.• Follow waste characterization, packaging, transportation, and disposition procedures and plans.• Ensure that documents are written professionally and accurately.		

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- Ensure that fieldwork is carried out safely and in accordance with work instructions.
- DQOs will have qualitative and quantitative statements derived from the DQO Process that clarify study objectives, define the appropriate type of data, and specify the tolerable levels of potential decision errors that will be used as the basis for establishing the quality and quantity of data needed to support decisions and process knowledge.
- Subcontractor will follow ALARA principles and approved decontamination procedures.

CERCLA AREAS AND SWMU

SWMU No.	Description
1	C-747-C Oil Land Farm
11	C-400 TCE Leak Site
12	C-747-A UF ₄ Drum Yard
13	C-746-P/Pi Clean Scrap Yard
14	C-746-E/E1 Contaminated Scrap Yard
15	C-746-C/C1 Scrap Yard
16	C-746-D Classified Scrap Yard
19	C-410-B HF Neutralization Lagoon
20	C-410-E Emergency Holding Pond
26	C-400 to C-404 Underground Transfer Line
27	C-722 Acid Neutralization Tank
31	C-720 Compressor Pit Water Storage Tank
32	C-728 Clean Waste Oil Tanks
40	C-403 Neutralization Tank
47	C-400 TCE Storage Tank Area
56	C-540-A PCB Staging Area
57	C-541-A PCB Waste Staging Area
74	C-340 PCB Transformer Spill Site
75	C-633 PCB Spill Site
76	C-632-B Sulfuric Acid Storage Tank
77	C-634-B Sulfuric Acid Storage Tank
78	C-420 PCB Spill Site
79	C-611 PCB Spill Site
80	C-540 PCB Spill Site
81	C-541 PCB Spill Site
92	Fill area for dirt from the C-420 PCB Spill Site
97	C-601 Diesel Spill
99	C-745 Kellogg Building Site
135	C-333 PCB Soil Contamination
137	C-746-A Inactive PCB Area
138	C-100 Southside Berm
153	C-331 PCB Soil Contamination (West)
154	C-331 PCB Soil Contamination (Southeast)
155	C-333 PCB Soil Contamination (West)

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	156	C-310 PCB Soil Contamination (West Side)	
	158	Chilled-Water System Leak Site	
	160	C-745 Cylinder Yard Spoils (PCB Soils)	
	163	C-304 Bldg./HVAC Piping System (Soil Backfill)	
	165	C-616-L Pipeline & Vault Soil Contamination	
	169	C-410-E HF Vent Surge Protection Tank	
	170	C-729 Acetylene Bldg. Drain Pits	
	172	C-726 Sandblasting Facility	
	176	C-331 RCW Leak Northwest Side	
	177	C-331 Leak East Side	
	180	Outdoor Firing Range (WKWMA)	
	181	Outdoor Firing Range (PGDP)	
	194	McGraw Construction Facilities (South Side)	
	195	Curlee Road Contaminated Soil Mounds	
	196	C-746-A Septic System	
	200	Soil Contamination South of TSCA Waste Storage Facility	
	204	Dykes Road Historical Staging Area	
	211	C-720 TCE Spill Site Northwest	
	212	C-745-A Radiological Contamination Area	
	213	DMSA OS-02	
	214	DMSA OS-03	
	215	DMSA OS-04	
	216	DMSA OS-05	
	217	DMSA OS-06	
	218	DMSA OS-07	
	219	DMSA OS-08	
	220	DMSA OS-09	
	221	DMSA OS-10	
	222	DMSA OS-11	
	223	DMSA OS-12	
	224	DMSA OS-13	
	225	DMSA OS-14	
	226	DMSA OS-15	
	227	DMSA OS-16	
	228	DMSA OS-17	
	229	DMSA OS-18	
	481	C-410-A Hydrogen Cylinder	
	483	Nitrogen Generating Facilities	
	488	PCB Contamination Area by the C-410 Trailer Complex	
	489	Septic Tank, North of C-710	
	492	Contaminated Soil Area, North of Outfall 10	
	493	Concrete Rubble Piles Near Outfall 001	
	517	Rubble and Debris Erosion Control Fill Area	
	518	Field South of C-746-P1 Clean Scrap Yard	
	520	Scrap Material West of C-746-A	
	531	Aluminum Slag Reacting Area	

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541		Contaminated Soil Area, South of Outfall 011	

BASIS OF ESTIMATE

1. Summary of Site Conditions
The RI will be complete.

2. Estimating Methods
☐ Parametric ☐ Bottom-Up ☒ Other: Parametric & Bottom-Up

3. Sources of Estimating
Labor – Technical review of documents to be prepared determined the mix of labor required for document preparation. Echols & R.S. Means were used to determine craft types to be used for construction-type activities. Project team meetings were utilized to identify staff types to be used for other areas, such as sample collection and analysis, waste characterization and disposal, health and safety monitoring, etc.

Equipment – Echols & R.S. Means were two printed sources used to determine the types of equipment needed to conduct the work proposed. Experience from technical staff also provided input as to the type of equipment needed.

Materials – Same as equipment.

Other Direct Cost – Same as equipment.

Transportation – Same as equipment.

Subcontracts – Experience from technical staff provided requirements for the involvement of subcontracts.

4. Basis of Estimate (Unescalated Values)
See Detail Estimate.

WASTE VOLUMES
See attached waste performance metrics, as applicable.

PROJECT SCHEDULE
See attached schedule.

BASELINE BY YEAR
See attached Baseline by Year Report.